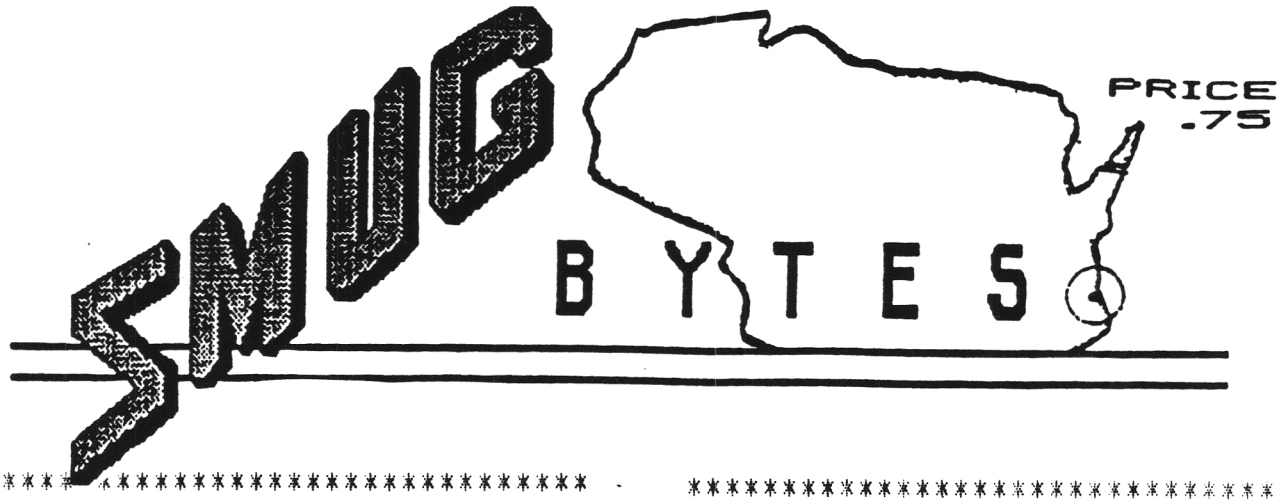

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THIS MONTH:

NEXT MEETING DATE: 12/05/90
SEE YOU THERE

Send all contributions by the 3rd Wednesday of the month to:

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Editor
SMUG BYTES
5052 N. 91st Street
Milwaukee WI 53225-4129

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*Hardware - G. Kraemer
Meet-no set date. Call for info.
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*QL - R. Hilsmann
*Meeting 3rd Wednesday of month
- 251 5291
*Spectrum - R. Hilsmann
*Meeting 3rd Wednesday of month
- 251 5291

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The Limits Of Computer Intelligence II

by Dr. Lloyd Dreger

Editors note: This is the talk Dr. Dreger gave at the '90 Expo. Also because of the length of the article it will run in the next four issues of SMUG Bytes. This is the 3rd part.

As previously stated, one hope of AI is that one can create meanings by using complex enough algorithms on big enough data bases. Something better than mathematical equivalence must be invoked as "a$=b$" literally means "let the contents of a$ equal the contents of b$". If a$ = nonsense and b$ = gobbledegook, a$ now also equals gobbledegook. One meaningless string of symbols has been substituted for an equally meaningless string of symbols. One can do substitutions ad nauseam and never achieve cognition. But let's go back to that Chinese room and give our English cognizant individual another book--a Chinese dictionary with definitions written in Chinese but devoid of any illustrations. We don't tell him what to do with this book or even that it's a dictionary. It won't be too helpful but at least the human will look at the book and soon discover what its use is. Depending upon how intelligent he is he may now have the key he needs. But, let's assume he isn't a genius in languages. Let's change the dictionary by using a profusion of illustrations with arrows pointing at significant parts of each illustration. Let's also do it in colored illustrations. All of a sudden Chinese is understandable. The person now has "something to relate to", something he understands. He is soon relating Chinese symbols to their English word or phrase equivalents. The clue in the above paragraph was "something to relate to". More exactly something he already understands that he can relate to. We are going to have to do the same for the computer. -Continued page 6-

"QQ" NOTES

BY R.A.HILSMANN

Hope you all survived the good food on Thanksgiving day? I have no complaints to report from my side.

It also looks like no one had missed my column in the last few issues of SMUG Bytes, at least I hadn't received any complaints about it either. It's difficult to come up with something to write about at times, besides one has to find the time as well, That's why.

For this issue I will ramble about a few things I have discovered and learned about the QL and some other stuffs.

Have you expanded your QL with a TRUMP CARD ?? If you have, and enjoy the extra memory and some other functions this add on gives you, let me give you a hint on what to expect when one of your memory chips goes to computer heaven. Memory chips in the Trump Card is what I'm talking about. Something which I battled with for about an hour.

Should your Trump Card fail to initialize, chances are one or more of the memory chips have bit the dust. How do you recover? At least until you are able to get a new chip! Well first you would have to find out which chip (or chips) has elected to quit. Use the following technique to find the bad one, but be aware of the fragile connector between the Trump Card and your QL. Use common sense when removing and inserting the Card from the QL. By the time your through finding the bad chip, you will have become an expert "PLUGGER" and "UNPLUGGER", that I can assure you.

To begin your exercise, remove the board from your QL and take the cover off by removing the screw holding the voltage regulator to the board (I trust you have removed the disk drive cable first.) If you have a heat sink for this type of a transistor, mount same to the regulator for the time being. If you don't have a heat sink, attach a piece of metal, or a metal clip to the regulator to keep it from over heating while you test it. Just make sure that the item you attach to the regulator doesn't touch any other trace or component on the board.

After completing the above, have a look at the board from the component side. Looking at the board from the QL side, having the disk cable connector facing away from you, you will see three rows of chips. Those are the memory chips you have to manipulate one by one to find the bad chip.

Next find something to mark all tested chips, such as a pencil or marker pen that shows up on the dark surface of the chips. Remove the first chip towards you in the far right bank of chips, and insert one of the other chips (the one you think is bad, or use any other scientific approach you choose,) either out of the same bank, or another, in its place. Mark the chip you removed from the right hand bank (first position,) and insert same into the empty socket from which you have removed the second chip, making sure both chips are inserted the correct way.

One thing I forgot to mention, make sure the power is removed from your QL when you insert and remove the TRUMP CARD. If you do not, you may be in for some more bad chips someplace else.

Needless to say!? If you have problems understanding the significancy of removing the power when removing or inserting an external device, you should leave this project for someone else to complete. But for all the rest of you who know why to remove power form your QL, don't forget!!

"DON'T FORGET !!!!!!"

The next thing you would have to do after you have completed exchanging the two chips is, to insert the Trump Card back into the QL. Turn the power back on, and see if the card will initialize.

Let me explain first how you do notice when a chip goes bad in your Trump Card. Your QL will not initialize at all, that's how. If now, after you exchanged the chips, your QL does not initialize again, well, you have not found the chip that's bad, because if you would have put the bad chip into the first position of the far right bank, your QL would have initialized, but not with the usual 896 K-bytes, but only with somewhere around 597 K-bytes.

I have found that when you have a bad chip in any other position but the first one in the right bank, your QL will not initialize at all. If however this bad chip is located in the first position of the right bank, your QL will initialize the other two banks, and run fine with less memory. At least this would let you use the QL to some degree.

But getting back to checking for the bad chip. After you have not succeeded to get your QL to initialize the two left banks, try again, this time exchange another chip with the one in the first position in the far right bank, marking the one you remove from that position of course. Sooner or later you will run into the bad one, and be able to quit.

One problem! If you have more than one chip that's bad, are you out of luck? No, not quite! You would have to start all over again, but this time you would have to exchange two chips at a time into the first and second position of the far right bank. If this still does not solve the problem, try three chips, four chips, or the whole bank. This can of course take a while, and test your patience to the breaking point.

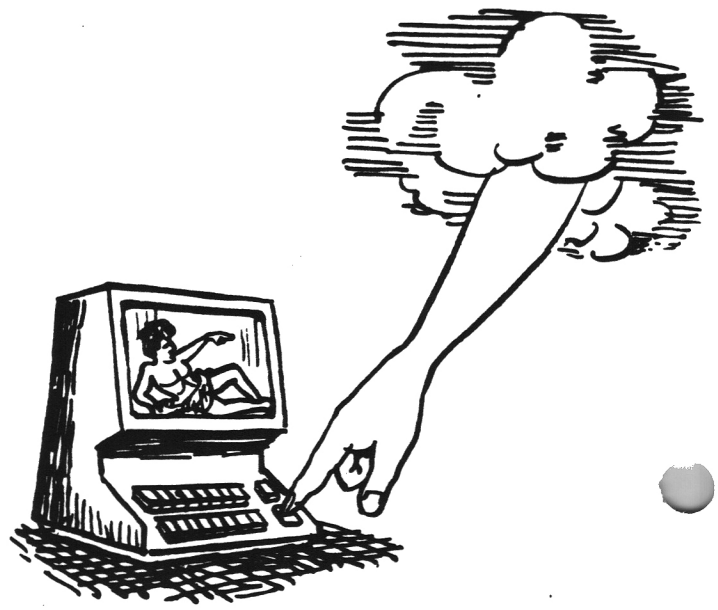
There is of course a better way to find bad chips, but unless you're familiar with a probe, and what to look for when you hold the probe to certain pins on the chips, you will have to do it the PLUG - UNPLUG way.

Just remember, the bad chip or chips will have to be in the far right bank only, from the first position up if you look at the board from the QL side, having the disk cable connector facing away from you. Only if the first chip holds the bad chip, and all other bad chips are in this bank, only then will your other banks initialize.

And please be careful when you remove and insert the Trump Card, the chips, and the power plug.

Yes the Power Plug as well! You may say that the power plug can not be inserted the wrong way because it has rounded corners on one side!!! Wrong, I have managed to blow up a QL trying to plug it in the wrong way as you may remember. You will not be able to plug it in alright, but you may make contact with the 12 volt side of the plug touching the 5 volt side of the receptacle, just long enough to blow up a few chips in your QL.

Have fun! I of course do not wish your memory chips to go bad, but if they do, try the above method.



To emulate, or not to emulate?

Perhaps you have tried to emulate your QL with MS-DOS already? Perhaps not! Yes there is such software that will permit your QL to think IBM! I had the chance to try it, and like to pass my experience on to you.

Do you remember the days when you sat in front of the ZX81 or the Timex 1000 and waited for the program to load into the computer? Did this frustrate you? Where you happy when the TS 2068 loaded your programs in at four times the speed, not to talk about the day when you got your first disk drive for that machine...WOW did things fly, only one second to load a 32K program into the machine!!

Do you really like to go back to the days of the ZX81 or TS1000? If you emulate your QL with MS-DOS, or in other words make it IBM compatible, be prepared to sit and wait again! It doesn't make any difference if you have fast drives or not, you are in for it. At least that's the way I felt when I booted up MS-DOS after I loaded PC-Conqueror into the QL. Gosh am I glad I just borrowed the program! It got me so frustrated that I went out and bought an IBM compatible. When I ran the Benchtest on the compatible, which runs at 8 megs, it finished in 59 seconds. I still have to see it done at all on the emulated QL. We had it running for 45 minutes and finally turned the machine off.

Do I think the emulator is a bad investment? Well it depends what you like to do on the emulated QL? If you only like to import or export files between a compatible and the QL, I would say it's a good deal. A bit frustrating at times, but it will work alright.

If you however like to run IBM programs on the QL, I would say forget it. I have heard there are ways to speed things up if you have a program called "Lightning", and use MS-DOS version 3.3, but I still can not see that this would improve the speed by that much. It is not just the booting of MS-DOS what I'm talking about, but the slowness with which the programs run, screen updating included. Sure one could change the time the QL spends in each task, but this is not changing overall speed with which the programs are executed.

It may sound like an unfair description of a good piece of software, but all I can say is; try it yourself, and see if you do agree.

Does this mean you should trash your QL? Of course not, the QL is a good machine by itself, and so are all the other Sinclair Timex machines. I especially like the 2068 for its transparency, which can not be said about many other, more expensive computers, such as the one I'm using right now to type this last page (I couldn't resist). I would have typed all three pages using this machine, but the manual for the PC-WRITER word processor has about 100 pages. Now I can find out first hand what they mean when they say they have to go to computer classes to learn how to use a word processor. But look at the justified spaces between words! I think once I get the hang of this piece of software, it will serve me well.

I guess that should do it for this month. I hope you all have a nice christmas, and a good slide into the new year, lets hope it will be a peaceful year, and may Santa bring you all the new toys for your computer desk.

Till next year

R.A.H.....

****

PRESIDENTS PROGRAM

Up comming events: Sat Jan. 12. Waukesha County Expo.$3 at the door.

There Will Be A December Issue

I have received a nice amount of info So there will be a December issue. See you next month.

QUILL Users

I have just been playing around with Quill and found out how to jump to the previous or next paragraph. What I mean is you jump to the position of the enter key. If you use the enter key at other places then the end or start of a paragraph it will go to those places also.

What you have to do is go to the command menu (F3) and select the copy command (M). Now press the down or up arrow and you will go to the prior or next use of the enter key. When done use the ESC key to return to the entry mode. Works when copying too. Try it you'll like it. You now can skip some lines when copying.

AI Continued

We have to relate a word to what a computer can understand. What does a computer understand? What can a computer do? It can read and write to various memory locations by means of pulses of electricity. It understands these pulses either as instructions or as data and knows which is which. Furthermore, it can do various mathematical operations on what it holds in its internal registers. It also has various flags that it sets and resets as it does these operations. It does all these things but it doesn't understand what they are or why it does them. It is an automaton stupidly following instructions.

Conclusion 1. **Computer programs can only do the syntatical portion of minds**. Computers do only simplified mathematical operations that can result in addition, subtraction, multiplication and division. Adding the ability to compare gives the operations of sorting and the ability to branch and jump in algorithms.

An important point is that the instruction set and the computer hardware combine to give an ability.

Proposition 4: **Brains cause Minds.** Brain Simulation: The brain is the hardware of the mind. Processing signals through the brain results in mental states and/or thoughts. One of the hopes of AI is to simulate brain neuron activity to process incoming data into cognition. Good luck!.

The problems involved in brain simulation are immense, Changeux tells us that the cerebral portion of the typical adult human brain consists of approximately 30 billion neurons. Another 70 are found in the cerebellum and you have to add still more for the mid-brain which is involved in sending signals to various parts of the brain. Now each neuron contains thousands of dendrites (synapses to accept signals) and has one axiom with thousands of branches to send signals to other neurons. On average a total of about 10,000 inputs and outputs although some may have upwards of 32,000. Not all these synapses are attached to other neurons but they may at anytime in the future. One of the phenomenons of the brain is that, although no new neurons are ever grown, synaptic connections on live neurons form and disappear throughout the life of the brain depending somewhat upon the use of a particular neuron. All synaptic connections are not present at birth but are formed as needed by the experiences the person has. The number of synaptic connections doesn't reach a maximum until age 15 to 20. After that time more synapses disappear than are created. This phenomenon allows neurons to reprogram themselves if necessary as has been shown by people suffering from brain damage. As long

as the nucleus of the neuron is not destroyed, it can grow new dendtritic and axiom connections through the dead cell areas and connect up to other neurons. There are more than enough neurons to go around so a redundancy factor of at least 2 to 3 and sometimes as high as 5 is built in. Some axiom branches run amuck trying to reach a apecific traget and thus die off. The result of this is that no two brains get wired exactly the same way on a neuron by neuron basis as any of several neurons would do although in a general sort of way they all are wired the same. What does this mean for the brain simulation people? They have to sort out 100 billion neurons having ten quadrillion (10,000 trillion) interconnections. In addition, neuron by neuron mapping for one brain is not going to hold for the next. Even if less than 10% are involved in any one thought pattern sequence, the numbers are astronomical while specifics may never be learned.

As far as known the neuron fires or it doesn't depending upon the strength of the signals received from its various dendrite synapses. It merely adds all its inputs together. A certain threshold strength must be achieved before it will fire. Some synapses areinhibitory causing the next neuron not to fire, others are the more familiar excitatory type. There are several kinds of these. Some should really be considered as multiple strength in that they deliver a bigger wallop to the next neuron than others. There is a gap of either 2 or 20 to 50 nanometers between the anion end of one neuron and the dendrite end of the next. The small separation results in strictly electrical transfers. The wider separations require chemical transmitters. These transmitters can become depleted and result in non firing of a particular synaptic connection. (Certain hallucinogenics, such as cocaine and LSD in particular, cause indiscriminate firing of synapses thus using up the store of

chemicals needed for transmission and as a result cause a feeling of lethargy and depression which follows their use. This feeling persists until the brain has time to replenish the supply. These drugs are so debilitating that it may require weeks to recover fully.) Certain synapses respond to only one chemical transmitter while others respond to several. Not only does the brain simulator need to know the connections but also how powerful each one is. The chemical nature of the brain is what causes it to get tired -- something computer connections can't do. Signals in neurons travel at about 300 feet/second or less than the speed of sound while they travel at the speed of light in a computer. Brains can only process about 50 inputs per second (the sense of sight may be an exception to this) which also is a lot slower than computers.

Where is the memory of the brain? Where is the algorithm of the brain? From what has been said above both lie in the synaptic connections. Experiments on lower life forms show that another chemical converts temporary patterns of neural pathways into permanent ones by causing the growth of a single synapse of unit strength into a multiple strength synapse. Hence the brain has a mechanism for implementing brain set patterns and thus memory. If the synapses are not used at all the synapses degenerate back to the unit strength state or even disappear. If more synapses are needed to connect to other neurons, they are grown. This may be the case with intuition which seems to require an incubation period before it is achieved. It does take time to grow new dendrites with new synaptic connections. After all, the brain never really fully sleeps.

The Sinclair Milwaukee Users Group (SMUG)

We are a not-for-profit group devoted to serving the interests of those who own, use, and/or are interested in the Timex/Sinclair family of computers.

Editor and contact person is:
Bill Heberlein (414) 527 2191.

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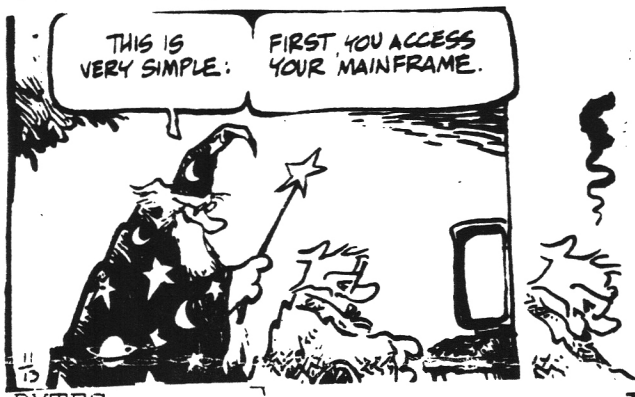

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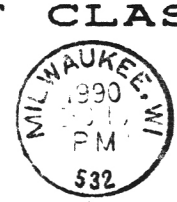

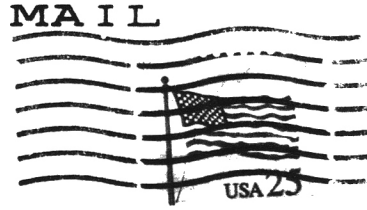

NITE-TIMES NEWS
CATUG Newsletter
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60107

The next meeting of SMUG will be held on:

Wednesday, December 5,1990

6:00 Set Up
7:30 Business Meeting
9:00 MODEM continued
6:30 MODEM training using the QL
8:30 Who Can Show What They'r Doing
10:30 Clean Up

Wednesday, January 2,1991

6:00 Set Up
7:30 Business Meeting
9:00 MODEM continued
6:30 MODEM training using the QL
8:30 Elections - Who's The New Officer
10:30 Clean Up

Location:
Equitable Savings and Loan,
145th and Capital Drive,
Milwaukee WI